

## **REMARKS**

The Examiner is thanked for the courtesies extended to the Applicant's attorney during their phone conference of 31 October 2008. During the conversation the Examiner and the Applicant's attorney seemed to reach an agreement that all of the errors noted in the claim had been addressed, and that the attached material relating to the water soluble nature of carboxymethylcellulose was sufficient to satisfy the Examiner.

However, the Examiner requested that we include some reference material relating to Polyiminodiacetamide. In this response, the applicant has deleted the term "Polyiminodiacetamide" from the claim, thus making the Examiner's request moot.

In the official action, the following points were raised by the Examiner.

The Examiner first objected to the Markush language of Claim 9. In particular, the Examiner believed that the term "comprising" should be removed, and the phrase "consisting of" inserted in its place.

With this Response, the Applicant has accepted the Examiner's suggestion, and has deleted the term "comprising" and replaced it with the phrase "consisting of".

The Applicant believes that this change therefore renders the Examiner's objection moot.

The Examiner next rejected Claim 9, paragraph 1. In particular, the Examiner did not believe that the compounds listed in Claim 9 were recited in the Specification.

With this Response, the Applicant has amended Claim 9.

It appears that the gravamen of the rejection based on the incorrectness of the compounds listed is that spelling errors were made in the amended Claim 9. With this

amendment, the Applicant believes that all of the objectionable terms are now spelled correctly, so that all of the compounds that are now recited in Claim 9 are only those compounds for which support is found in the Specification, wherein the terms were spelled correctly.

In making these changes, the Applicant has basically adopted the Examiner's suggestion.

The Examiner also questioned what "octanesufonyl" was. With this amendment, the Applicant has corrected the spelling of this term, so that it now recites "octanesulfonyl". With this change, the Applicant believes that the matter is suitably clarified.

In another matter, the Examiner questioned whether carboxymethylcellulose and polyiminodiacetamide, were in fact water soluble polymers.

The Applicants submit that these are water soluble polymers.

Attached hereto as Exhibit A is a short article that relates to the water solubility of carboxymethylcellulose. Unfortunately, the Applicant was unable to find any corresponding article relating to polyiminodiacetamide, relating to its water solubility. However, the Applicant submits that it is water soluble.

The Applicant also notes that there were no substantive rejections either in Sections 102 or 103 that were lodged against the instant application.

### ***Conclusion***

The Applicant respectfully requests entry of this Amendment. Even though this Amendment is being entered after a final rejection, the Applicant submits that no new issues are being raised. The claims are not being changed substantively. Rather, the claims are just being

placed in better condition for allowance by correcting spelling errors. As such, the Examiner should need to do no significant amount of work or conduct no further searches in order to approve the instant application.

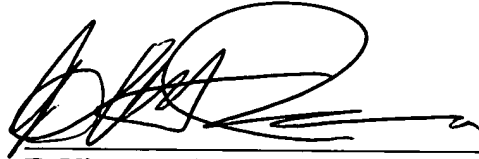
For the foregoing reasons, the Applicant submits that its claim patentably distinguishes his invention from the art of record. Re-examination and re-consideration culminating in allowance of the claim is respectfully requested.

It is respectfully requested that the Examiner so find the claim to be allowable, and issue a Notice of Allowance in due course.

***Request for Appropriate Extension of Time***

If necessary, Applicant requests that this Response be considered a Request for an Extension of Time for a time appropriate for the response to be timely filed. Applicant requests that any required fees needed beyond those submitted with this Response be charged to the account of **E. Victor Indiano, Deposit Account Number 50-1590.**

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'E. Victor Indiano', written over a horizontal line.

E. Victor Indiano, #30,143

cc Mr. Anthony J. Moravec  
Mr. Ryan Moravecc

Enc: Exhibit A:

# Exhibit A

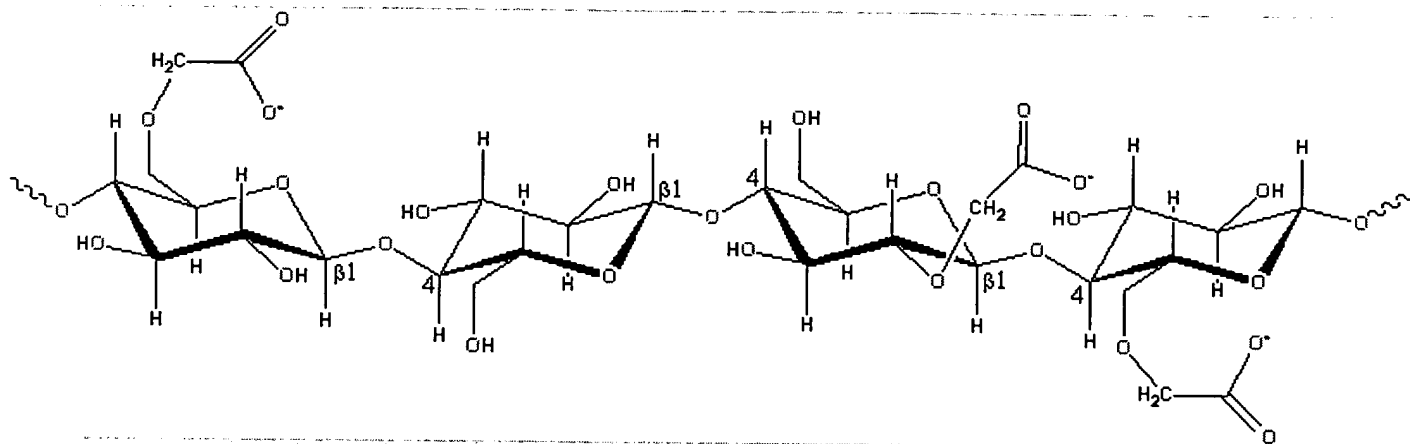
## Carboxymethylcellulose (CMC)

- ▼ Source
- ▼ Structural unit
- ▼ Molecular structure
- ▼ Functionality

### Source

Carboxymethylcellulose (CMC; **E466**) is a derivative of cellulose formed by its reaction with alkali and chloroacetic acid.

### Structural unit



The CMC structure is based on the β-(1→4)-D-glucopyranose polymer of cellulose. Different preparations may have different degrees of substitution, but it is generally in the range 0.6 - 0.95 derivatives per monomer unit. [[Back to Top ▲](#)]

### Molecular structure

CMC molecules are somewhat shorter, on average, than native cellulose with uneven derivatization giving areas of high and low substitution. This substitution is mostly 2-O- and 6-O-linked, followed in order of importance by 2,6-di-O- then 3-O-, 3,6-di-O-, 2,3-di-O- lastly 2,3,6-tri-O-linked. It appears that the substitution process is a slightly cooperative (within residues) rather than random process giving slightly higher than expected unsubstituted and trisubstituted areas. CMC molecules are most extended (rod-like) at low concentrations but at higher concentrations the molecules overlap and coil up and then, at high concentrations, entangle to become a thermoreversible gel. Increasing ionic strength and reducing pH both decrease the viscosity as they cause the polymer to become more coiled. [[Back to Top ▲](#)]

### Functionality

Most CMCs dissolve rapidly in cold water and are mainly used for controlling viscosity without gelling (CMC, at typical concentrations, does not gel even in the presence of calcium ions). As its viscosity drops during heating, it may be used to improve the volume yield during baking by

encouraging gas bubble formation. Its control of viscosity allows use as thickener, phase and emulsion stabilizer (for example, with milk casein), and suspending agent. CMC can be also used for its water-holding capacity as this is high even at low viscosity; particularly when used as the  $\text{Ca}^{2+}$  salt. Thus, it is used for retarding staling and reducing fat uptake into fried foods.

The average chain length and degree of substitution are of great importance; the more-hydrophobic lower substituted CMCs are **thixotropic** but more-extended higher substituted CMCs are **pseudoplastic**. At low pH, CMC may form cross-links through lactonization between carboxylic acid and free hydroxyl groups.

The solution properties of a range of commercial CMC's have been investigated [879].

Interactive structures are available (**Chime**, 5 KB). [[Back to Top](#) ▲]

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This page was last updated by **Martin Chaplin** on 22 June, 2008